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54) Title: Sealing Arrangement on Loading Openings of Buildings

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Sealing Arrangement on Loading Openings of Buildings

The invention concerns a sealing arrangement to close the intermediate space present between the loading opening and the wall of the building and the body of a vehicle whose rear end extends into the building opening for the loading or unloading process.

Known sealing arrangements for this purpose consist of elastic strips that extend from the top edge and the two side edges of the loading hatch into the opening and conform to the body of the vehicle pushed into the opening. Other known designs of seals consist of extensive, elastically deformable thickenings that enclose the opening, which are either filled with foam rubber or are inflated with air. These known arrangements have the drawback that their size can only be adapted to a limited degree to very different vehicle bodies.

The underlying task of the invention is to devise a sealing arrangement that is suitable for vehicles with very different dimensions and also with uneven contours.

According to the invention a folding wall formed from two wings that can be pivoted relative to each other, along whose inside edge a sealing roll is applied, and a screen consisting of several successive curtain sheets that seal the upper sealing gap are arranged on both sides of the loading opening. The outer wing of the folding wall is mounted to pivot on the building wall in such a way that it can be pivoted outward from its normal position, in which it protrudes vertically from the building wall by about 90° against the resistance of, say, a spring. On the front edge of each outer wing the inner wing is also hinged to pivot, which in its normal position faces inward at right angles to the outer wing, i.e., parallel to the building wall. The inner wing can also be pivoted inward against a certain resistance by about 90°, i.e., opposite the pivoting freedom of the outer wing. The wings and the folding wall can be designed as rectangular frames that are covered on one or both sides with a flat material, especially a flexible skin made of rubber or plastic. They can also be designed differently but it is essential that they represent two foldable surfaces that can be pivoted together relative to the building wall. Along the inside edge of the inner wing and in a continuation of the plane of the wing, a thick roll of elastic, easily deformable material is arranged around a vertical shaft running parallel to the inside edge, which is elastically adapted to the side wall of the vehicle. The roll can also be divided into a number of stacked roll

sections. The roll or roll stack is loosely positioned with sufficient play above the vertical shaft. A spacing is left between the upper edge of the roll and the upper bearing of the shaft. The roll is elastically positioned on its lower end on a compression spring and can easily move up and down on the shaft in order to follow the height shift of the vehicle body that occurs from the weight change during loading and unloading without frictional displacement occurring between the roll and vehicle wall on this account.

Sealing of the horizontal gap between the upper horizontal edge of the building opening and the surface of the vehicle occurs by several curtains made of flexible material running parallel to the building wall and at a spacing in succession, which freely hang downward a little from the height of the upper edge of the building opening. Each curtain sheet is formed from strips arranged in a adjacent rows that overlap slightly. In this manner, several successive sealing lines are formed; in addition, the air chambers situated between the individual curtain sheets cause excellent heat insulation. The entire horizontal sealing device is combined in a frame covered on the top, which is hinged to the building wall so that it can be pivoted upward from the normal position protruding horizontally when a larger resistance occurs during pulling in and pulling out of the vehicle.

The drawings show a design possibility of the sealing arrangement as example.
In the drawings:
Figure 1 shows a view of the sealing arrangement.
Figure 2 shows a section along plane II-II viewed from the left.
Figure 3 shows a top view along plane III-III.
Figure 4 shows a section along plane II-II viewed from the right with details.
Figure 5 shows the left folding wing in a possible drive-in position (dashed line).
Figure 6 shows the right folding wing in a possible drive-out position (dashed line).

A folding wall formed from two foldable wings 3, 6 is mounted on the two vertically running edges of the loading opening 2 situated in building wall 1. The outer wing 3 is mounted to pivot with bearings 4 on building wall 1 in such a way that it can be pivoted outward (as indicated by the arc arrow X) from its normal position protruding vertically from the wall against the resistance of, say, a spring, by about 90°. On the front edge of this outer wing 3, the inner wing 6 is also mounted to pivot by means of hinge 5, which in its normal position faces inward at right angles from outer wing 3. This inner wing 6 can also be pivoted against a certain elastic

resistance only to about 90°, but inward, i.e., opposite the pivoting freedom of outer wing 3, as shown by arc Y. On the inside edge of the inner wing and in a continuation of the plane of the wing a thick roll 8 of elastic material is arranged around a vertical shaft 7, which is divided into a number of stacked roll sections. This roll 8 of the roll stack is positioned over shaft 7 with a certain play. A spacing is also left between the upper edge of roll 8 and the upper end of shaft 7 so that the roll, which is forced up by the coil compression spring 7a, can move up and down easily on shaft 7. This freedom of movement means that the roll 8 pressed against the vehicle can follow the raising and lowering of the vehicle that occurs from the weight change during loading and unloading. Springs that keep the wings in the normal position depicted in Figure 3 are arranged in the hinges 4 and 5 (not shown), in which the spring force in hinge 4 is somewhat greater than the force in hinge 5.

If a vehicle backs into the loading opening, the inner wing 6 will be pivoted around hinge 5 in the direction toward the loading opening (Figure 5). Because of the spring pressure of the springs arranged in hinges 5, the rolls 8 are pressed slightly against the side walls of the vehicle body structure. Because of a somewhat stronger spring force in hinges 4, the outer wings 3 maintain their normal position protruding vertically from building wall 1. When the vehicle leaves the loading opening 2 the easy rotatability of rolls 8 causes frictionless release of the vehicle from the folding walls. However, if a certain resistance occurs, the elastic bearing 4 of the outer wing 3 on building wall 1 permits pivoting of the entire folding wall in the pivoting range of arc X and thus avoids jamming of roll 8, as shown in Figure 6.

The upper seal between the horizontal edge of building opening 2 and the surface of the vehicle structure occurs by several curtain sheets 10 running parallel to the building wall 1, which are arranged at a spacing one behind the other. Each curtain sheet is formed from strips of a flexible material, like rubber or plastic, arranged in adjacent rows, which slightly overlap. The curtain sheets are combined in a frame 11, which can be pivoted upward from its horizontal normal position around hinge 12 when a certain resistance occurs during entry or leaving of the vehicle, and is shown in Figure 4 with arc Z.

Patent Claims

1. Sealing arrangement to close the intermediate space between the loading opening of a building and the body of an entered vehicle, characterized by a folding wall formed from 2 oppositely pivotable wings (3, 6) arranged on both sides of loading opening (2), along whose inside edge a sealing roll (8) is mounted and a screen consisting of several successive curtain sheets (10) that seal the upper opening gap.

2. Arrangement according to Claim 1, characterized by the fact that the outer wing (3) of the folding wall can be pivoted outward around hinge (4) on building wall (1) against an elastic resistance and the inner wing (6) is mounted to pivot inward against a smaller elastic resistance around hinge (5) on the front edges of outer wing (3).

3. Arrangement according to Claims 1 or 2, characterized by the fact that the sealing rolls (8) are mounted to be displaced in height on shaft (7) and lie on a coil compression spring (7a).

4. Arrangement according to Claim 1, characterized by the fact that the parallel-running curtain sheets (10) are formed by overlapping strips of flexible material and are secured in a frame (11) closed on the top, which is mounted to pivot upward around hinge (12) on building wall (1).

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Fig. 2

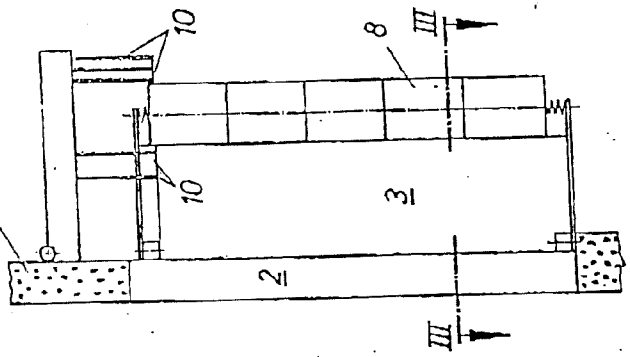


Fig. 1

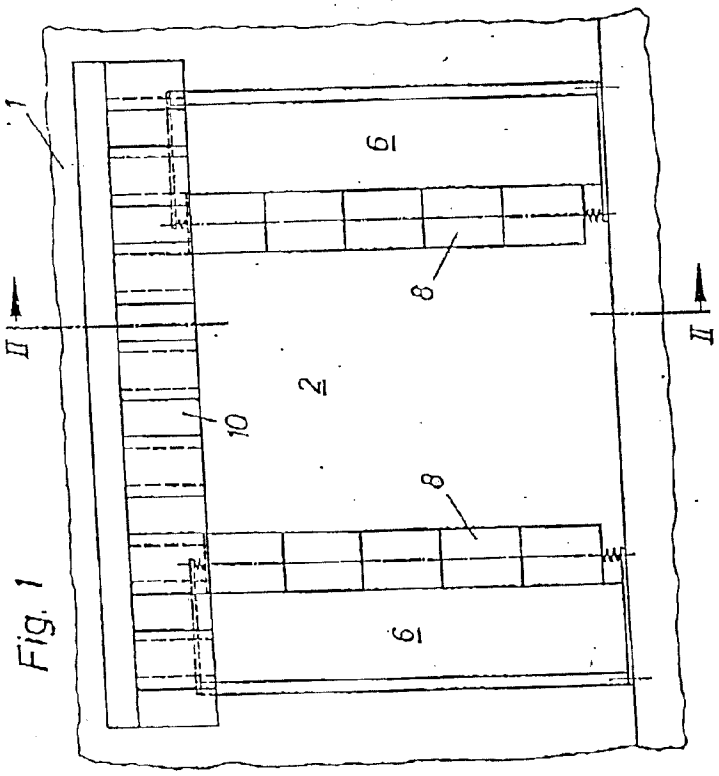


Fig. 6

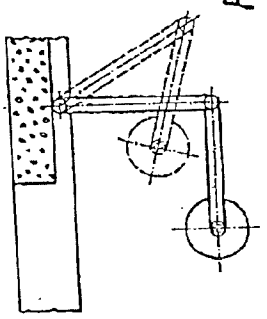
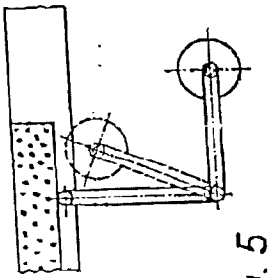


Fig. 5



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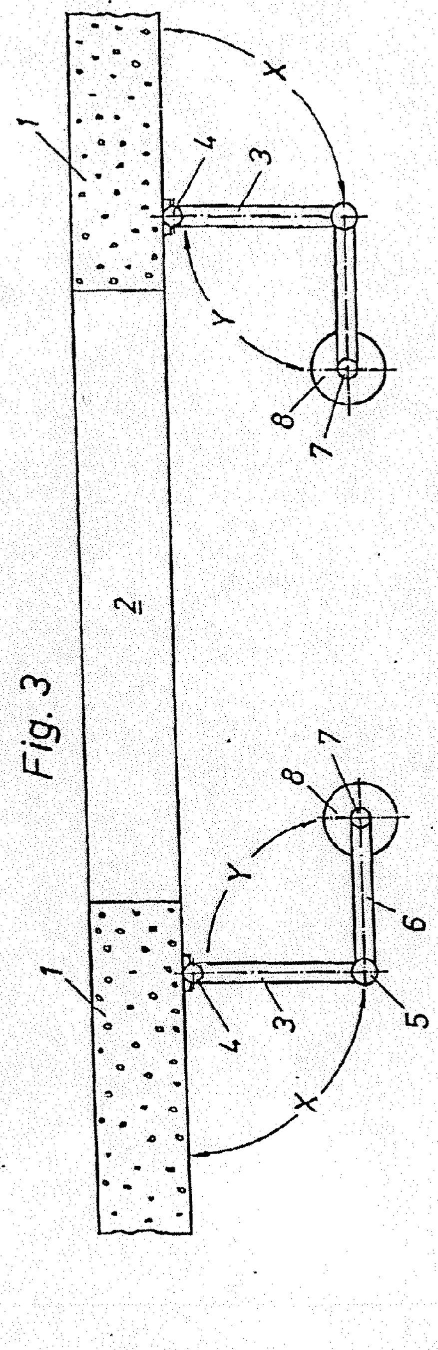

Fig. 3

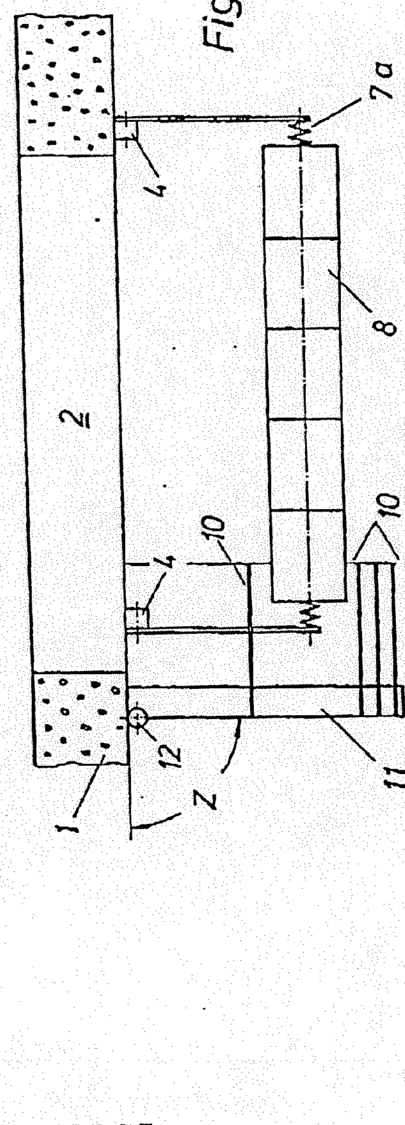

Fig. 4